*Case Report*

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# A Rare Case of Varicella Zoster Encephalitis with Shingles in an Uncontrolled Diabetic Indian Patient

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**Abstract**

Varicella Zoster Virus is a type of Human Alpha herpes Virus which usually cause Chicken Pox in Children and most commonly presents as shingles in the adult patient as dermatological Disease which are painful Vesicular Skin Eruptions Localized to a specific dermatome of the body also known as Herpes Zoster. One of the rare and dreaded Complication of Varicella Zoster Infection is involvement of the Central Nervous System causing varicella zoster virus encephalitis (Vze). Vze was often underdiagnosed earlier due to its Nonspecific clinical presentation but in present Era Polymerase Chain Reaction for Detecting Viral Particles in cerebrospinal fluid Provides a rapid and accurate Means of Diagnosis.

In this case report, one Patient with Vze Diagnosed by a positive cerebrospinal fluid polymerase Chain Reaction and the Literature is reviewed and we discussed his Clinical History and Physical Exam findings that should raise clinical suspicion for Varicella Zoster Encephalitis, as well as epidemiology, risk factors, diagnosis and Treatment of this Type of Infection. We Provide a detailed approach to the Diagnosis and treatment of Vze.

**Keywords:** Viral Encephalitis; Herpes; Zoster diabetes.

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## INTRODUCTION

This Case presents a Patient with Varicella Zoster Virus (Vzv) Encephalitis Caused by varicella zoster virus infection in the Patient having active virus Reactivation in the form of shingles (herpes zoster) on the Left Trunk with only uncontrolled Diabetes Mellitus Type 2 as immunocompromised host factor.

Varicella zoster Encephalitis Occurs in one out of around 50,000 Cases of Vzv According to the world health Organization report and it has a very poor Prognosis as Comparision to the other Extracutaneous Complications of Vzv. This case report represents that early definite Recognition and management of this type of Infection can reduce Mortality and morbidity of the infection in such Patients.

Varicella-Zoster Virus (Vzv) Causes a Primary Illness jnown as Varicella or Chicken Pox that Usually Occurs in Childhood, Becomes Latent in the cranial Nerve and sensory Nerve Ganglia, and can later Reactivate to Cause Herpes Zoster or Shingles.[1]

It has been Estimated that 0.01% to 0.25% of Patients with Varicella develop overt Neurological Complications Such as Cerebellar Ataxia, Encephalitis, Transverse Myelitis, Aseptic Meningitis, Polyneuritis, Cranial Neuropathies, and Reye Syndrome.[2]

Complication regarding to Neurological origin are More Commonly seen in the Herpes Zoster Phase of varicella infection. These Sequelae Include in order of decreasing incidence Postherpetic Neuralgia, Cranial Nerve Palsies, Peripheral Motor Neuropathy, Myelitis, Encephalitis, Thrombotic Cerebral Vasculopathy, Acute Ascending Polyradiculitis, and Aseptic Meningitis.[3]

Vze is an Uncommon Complication of Herpes Zoster. Immunosuppression is the Principal Risk Factor for the development of Vze.[4]

Historically, the Diagnosis of Hze Depended on the presence of the Characteristic Rash Along with the temporal development of Clinical Encephalitis. With the advent of the Polymerase Chain Reaction (Pcr) technique for Identifying Vzv in the Cerebrospinal Fluid (Csf), Vze Can be Definitively Diagnosed, Thus Allowing for directed therapy.[5]

## CASE REPORT

A 63 Year old Male Presented with complaints of high grade fever and increased sleepiness since 1 day. He was a known case of type 2 diabetes mellitus and hypertension since 6 years. His diabetes mellitus was Uncontrolled and Last Hba1C done before 3 weeks was 12.0%.

On Examination patient was febrile (Temperature Was 102F), Pulse rate 1/2/Min, Blood Pressure was 160/100 Mm of Hg. Patient was drowsy and disoriented to time, Place and person. There were herpes zoster skin Lesions erythematous bandlike Vesiculopapular rash over the left third lumbar dermatome trunk and back region. (Fig. 1).

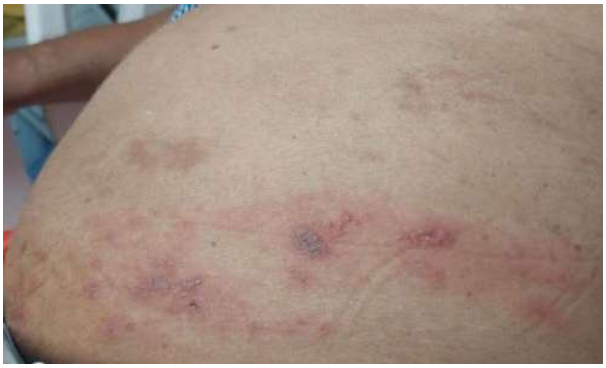

**Fig. 1:** Herpes Zoster Skin Rash Over Left Third Lumbar Dermatome.

After Initiating Initial Treatment, Mri Brain Contrast Study Was Done Which Showed Mild Gyriform Hyperintensity On T2/Flair Mri Brain Images In Cingulate Gyrus Suggesting Encephalitis (Fig. 2).

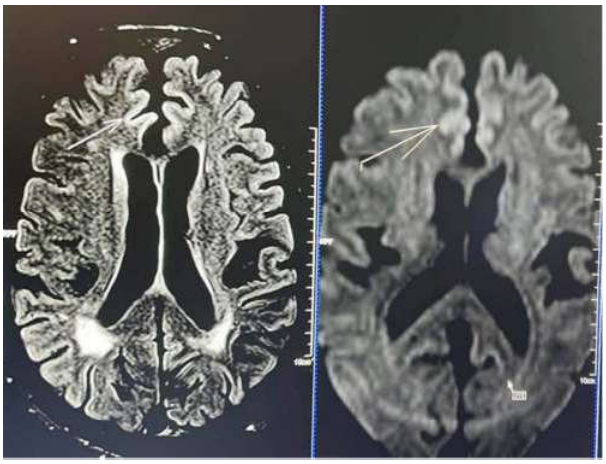

**Fig. 2:** MRI Brain in which the arrow is showing Mild Gyriform Hyperintensity In Cingulate Gyrus.

Patient Tlc was raised 16340/cumm with Neutrophilia. Esr was 40 and Crp was very high 104.4. Lft, Rft and other metabolic profile was Normal. Hiv elisa test was negative. Blood culture showed no Growth.

Meanwhile we have done Csf analysis which showed Csf total Cells 10 Cells/Cumm (Lymphocyte 100%), Csf Glucose 68.6 Mg/Dl (Patient Rbs at the Time of lumbar puncture was 152 Mg/Dl) CSF Protein was 63.2 Mg/Dl (High) which was suggestive of viral infective etiology.

CSF AFB Stain, Genexpert and Culture was Negative.

Csf was Sent For Multiplex Pcr assay which was Positive for varicella zoster virus (Picture Below).

Hence it was a proven case of Varicella Zoster Virus Encepahalitis. Then ceftriaxone and Vancomycin Drugs were stopped and only Inj Acyclovir (10gm/kg TDS) was given. Patient neurological condition improve after giving acyclovir but skin lesions increased initially later those also started improving.

Patient has been discharged after 1 week in stable Condition on tablet acylovir 800 mg give times a day for 14 days.

On follow up patient was doing absolutely fine neurologically and skin lesions Improved Completely and his blood sugars were also controlled with new Oral Hypoglycemic Medications.

## DISCUSSION

The oerall age adjusted annual incidence rate of herpes zoster has been reported to be 1.3 per 1000 Person years and incidence of Hze in the general Population is unknown. Among patients infected with Vzv, Hze has been found to occur in Approximately 0.1% To 0.2%.[6]

In a retrospective study of 1125 patients with systemic cancer, Hze Occurred in almost 1% of the Population.[7]

In another cohort study comprising 962 patients diagnosed with chronic lymphocytic leukemia, 2 Patients developed herpes zoster related Encephalitis.[8]

The severity and location of herpes zoster Involvement affect the risk for development of Hze. In a particular rare case series of 32 Patients with disseminated Herpes Zoster infection, among them 10 patients have varicella zoster Encephalitis.[9] Disseminated Herpes Zoster Increases the risk of developing encephalitis by 30%. Herpes Zoster Encephalitis also seemed to be more common after trigeminal distribution of shingles compared with other sites.[10]

The Presence of 2 or more prior episodes of Herpes zoster and cervical nerve involvement has also been found to predispose to the development of Hze. In both patients presented previously, diabetes mellitus was present and may have increased the Susceptibility to develope Hze. Diabetes has been Implicated as a predisposing factor in the development of herpes zoster associated Neurological Disease.[11]

For Mri, the common findings for Vzv encephalitis Are Edematous Changes with Hyperdensity in the temporal lobes and inferior frontal lobes with the basal ganglia being spared.[12]

Because of the rarity of Hze, Randomized Control Trials have not been performed to assess Medical Treatment. Moreover, the significant Morbidity of Hze coupled with the benign side effect Profile of antiherpetic therapy make it unlikely that a Placebo controlled study could be Ethically Performed. Numerous case reports and case series have Illustrated the effectiveness of Acyclovir In Hze. Standard treatment guideline of Vzv Encephalitis is intravenous (IV) Acyclovir (10 gm/kg q8h) for 14 days in an infected patient. The patient, in this case, received IV acyclovir for 1 week and was discharged on 2 week course of Oral Acyclovir. The incidence of Positive PCR CSF in Immunosuppressed patients with shingles alone is unknown.[13]

## CONCLUSION

The Presence of Vomiting, and altered Mental Status Changes Should Alert the emergency Physician to Consider Vzv Encephalitis, Especially in the Immunocompromised Patient or with herpes zoster lesions. Definite diagnosis by Lumbar Puncture CSF viral analysis and early Administration of IV acyclovir are Critical in improving the outcome of patient's condition.

The clinical manifestations of Hze are Variable, Non-specific, and often indistinguishable from other forms of encephalitis. Older and immunosuppressed individuals are more prone to acquiring the disease. The finding of an antecedent or concurrent episode of herpes zoster rash is a key in the diagnosis but is not always present. The CSF Vzv Pcr, a rapid and Highly Sensitive Test, is most valuable in proving the diagnosis of Hze and thus should be used when Hze is being Considered. timely treatment with acyclovir may be beneficial and should be instituted Empirically in suspected Cases.

Documented Patient Informed Consent and/ or institutional review board approval has been obtained and filed for publication of this case report.

### *Conflicts of Interest*

By the Article Submission agreement, All authors are required to disclose all Affiliations, Funding Sources and Financial or Management

Relationships that Could be Perceived as potential Sources of bias. The authors disclosed None.

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